

CODIB-D-49  
30 November 1959


UNITED STATES INTELLIGENCE BOARD  
COMMITTEE ON DOCUMENTATION

MEMORANDUM FOR: Committee on Documentation

SUBJECT : CODIB Working Group Report on the Proposed General  
Electric Indexing System for the Air Force

1. Attached for information is the CODIB Working Group report on the proposed General Electric indexing system for the Air Force together with the letter of transmittal to the Assistant Chief of Staff, Intelligence, USAF.

2. The report was sent to the Air Force for information in accordance with CODIB decision of 12 November 1959 (CODIB-M-18, para. 2 d)).

  
Paul A. Borel  
Chairman

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30 November 1959

Major General James H. Walsh, USAF  
Assistant Chief of Staff, Intelligence  
Headquarters, United States Air Force  
Washington 25, D.C.

Dear Jim:

On behalf of the USIB Committee on Documentation, I am attaching for your information the findings of its Working Group on Information Systems Compatibility from an analysis of the indexing system proposed by General Electric for System 438L. When you and the other members of the USIB agreed that the concept of compatibility of referencing systems was a worthy endeavor for CODIB (DCIB 1/4), the Committee defined the objective in such manner (CODIB-D-26) that the guidelines for studies such as this were made clear.

We attacked the indexing problem first in our total review of the proposal because we believe that indexing compatibility is probably the most important relationship between referencing systems. The decisions made by the indexers as to how a document should be stored are basic to the interchangeability of the indexed product.

In CODIB we are dedicated to the proposition that no mental or physical operation in the processing of information should be carried out more than once in the community unless we deliberately find that duplication in the particular instance is desirable.

It was with this in mind that the Working Group reviewed the General Electric proposal for indexing. The conclusions of its report are unequivocal -- the proposed system is not compatible with any existing or planned systems by the Army or CIA. ONI and NSA make clear that the cost of the proposed G.E. system would be prohibitive to them, and thus they held out little hope for eventual compatibility.

In receiving this Working Group report, the Committee on Documentation made several relevant points. We are interested in promoting research in advance techniques for indexing intelligence information. The report should therefore not be taken as an indication that further work on the "key word" concept may not eventually help to solve some of the indexing

- 2 -

problems we now have. However, on the basis of our limited examination of the G.K. indexing proposal, we do believe that considerably more work should be done on it before the indexing scheme is accepted as the basis for incurring substantial commitments for the acquisition of hardware.

We word about the competence of COLIB to speak on such matters. The design of large scale, comprehensive information systems is recognized to be an exceedingly complex matter involving the experience and judgment of such diverse specialists as systems designers, research and development personnel, personnel who operate the system once installed, and users for whose benefit the system exists. It is not the function of COLIB to second guess these experts. Nor should Committee representatives strive to examine each detail of any proposal. Members of the Committee on Documentation are primarily operators of systems. COLIB judgment therefore is probably most authoritative, and hence most useful, on such questions of compatibility as the need and methods for exchanging information between systems, comparative cost analyses, or specification of dimensions for the physical recording of data.

I want you to know how much the COLIB appreciates the cooperation of your staff in the assessment we are reporting here. When you have made your decisions regarding Phase Two of the Subsystem Design, we shall welcome a post-mortem on the COLIB performance and any suggestions you may have for future activities of the Committee in similar circumstances.

Sincerely,

/s/ Paul

Paul A. Borel  
Chairman

USIB Committee on Documentation

Attachment

Working Group Report: Compatibility  
of the Proposed Indexing System of the  
Subsystem AFCIN-1, -2, and -3 of 438L  
With Other USIB Systems

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CODIB-AFCS-R-1  
30 October 1959

UNITED STATES INTELLIGENCE BOARD

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WORKING GROUP ON INFORMATION SYSTEMS COMPATIBILITY

Compatibility of the Proposed Indexing System

of the Subsystem AFCIN-1, -2, and -3 of 438L

With Other USIB Systems

Introduction:

1. On 1 July 1959 the Committee on Documentation in Memorandum CODIB-D-40, disseminated the AFCIN Subsystem Design Approach Phase One Report for compatibility evaluation in accordance with CODIB-D-26. Subsequently the CODIB Working Group on Information Systems Compatibility was formed to study the proposed Subsystem. The Working Group drew its membership from ACSI, ONI, CIA and NSA. AFCIN furnished members to coordinate the relationships of the Working Group with the Contractor, General Electric, and with Air Force, and to participate in such activities of the Working Group as might be appropriate.

2. The Working Group took the proposed indexing system of the AFCIN Subsystem as the first area for consideration. The materials for the study of the indexing system were to be the G. E. report on the Design Approach for the Subsystem, and a briefing session with the G. E. personnel concerned with the proposed indexing system. However, the briefing session was postponed approximately one month at G. E.'s request, and before it took place G. E. had issued its report on the Detailed Design for the AFCIN Subsystem. This new report, together with certain working papers, the G. E. report on the Design Approach, and the briefing presented by the G. E. personnel on 15 October 1959 formed the body of material for the Working Group study of the proposed indexing system.

Scope:

3. In line with its Terms of Reference, the Working Group has endeavored to evaluate the proposed indexing system in terms of its compatibility with present and planned systems of ACSI, ONI, CIA and NSA, and to assess the nature and degree of impact of the proposed system on these Agencies. Also in line with the Terms of Reference, the Working Group has endeavored to familiarize itself with the details of operation of the proposed indexing system.

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- 2 -

CODIB-AFCS-R-1  
30 October 1959

Cooperation:

4. AFCIN and the G. E. personnel have cooperated wholeheartedly with the Working Group. All questions put to the G. E. personnel at the briefing session were freely answered except for those questions to which G. E. itself had not discovered the answers.

Principal Features of the Proposed Indexing System:

5. The proposed indexing system is a modified keyword (uniterm) system. Its principal features are as follows:

- (a) The index element is the plain English word. Input to and output from the index are in plain English words.

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(b)

- (c) Relationships among the terms which are assigned to an indexed concept are preserved in the index, unlike normal "keyword" indexing, in which the relationships are lost.
- (d) All indexing, selection of keywords, assignment of prefixes, and preparation of index input is to be done by human indexers, at least within the time limit of the proposed contract.
- (e) The dictionary of index words will be allowed to expand without limit.
- (f) Any other index system can be accommodated in the proposed indexing system. For example, the Intelligence Subject Code could be incorporated by prefixing all entries with a prefix identifying the group as "I. S. C.".
- (g) The index output contains the reference to the page number of the original document. However, the index output contains so much information that reference to the original is frequently unnecessary.
- (h) Text is indexed as deeply as the content warrants. There may be as much as fifty per cent of the original text in the index.

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- 3 -

CODIB-AFCS-R-1  
30 October 1959

Compatibility Aspects of the Proposed Indexing System:

6. The ACSI and CIA representatives stated that the proposed indexing system was not compatible with any present or proposed system in their respective Agencies. The ONI and NSA representatives considered the system in too early a stage of development for evaluation as to compatibility.

Impact of the Proposed Indexing System:

7. Representatives of all four Agencies stated that the proposed indexing system was too expensive, in terms of both manpower and money, for their Agencies to consider adopting it. Any exchange of pre-indexed material between AFCIN and the other members of USIB appears to be difficult, if not impossible, to achieve once the system is installed.

General Comment:

8. The consensus of opinion of the Working Group is that the proposed indexing system is at an early stage of development, with much work to be done before it can be placed in an operational situation. The stages of development still to be completed appear to be (1) information gathering concerning the practical operation of the system and the requirements of the users, (2) organization of the information gathered to establish procedures for the operation of the system and programs for the computers, and (3) testing and validation of the procedures and programs, with inevitable corrections and adjustments. Until the reliability of the new system is established by completion of the third stage above, it would appear to be advisable to continue the use of the present indexing system in the operational area.

Conclusions:

9. The proposed indexing system is not compatible with indexing systems present or planned in ACSI and CIA, and cannot be assessed for compatibility by ONI and NSA. However, both these Agencies state they could not afford the costs of the system, in manpower or money, and this fact gives little promise of eventual compatibility.

10. The impact of the indexing system upon the Agencies concerned is great or small depending on the value of pre-indexing which is exchanged. Some opinion but little factual data has been presented in this regard. An evaluation of the worth of pre-indexing to the recipient Agencies is needed, since it has a bearing on this as well as other considerations of systems compatibility.

F. R. THERIAULT  
Chairman, Working Group on  
Information Systems Compatibility